

RECEIVED  
CENTRAL FAX CENTER

SEP 29 2006

Patent  
43521-1400

IN THE CLAIMS:

1. (Currently Amended) An apparatus for analyzing brain functions, comprising:  
~~biosignal detection means for detecting a biosignal that is capable of identifying a waking level of an examinee in parallel with examination of the brain of the examinee conducted by an MRI System; [[and]]~~  
~~a functioning part location calculating means for finding out a part of the brain functioning in a state where a predetermined event is occurring in the biosignal by calculation based on a correlation between time-series data of the biosignal and a change in a strength of a MRI signal outputted from the MRI system obtaining information on an MRI signal strength at each state where the examinee is in a predetermined sleeping stage and where the examinee is in a predetermined waking stage;~~  
~~taking a differential of a change in the MRI signal strength considered significant in view of the correlativity with the change in state; and~~  
~~identifying a portion of the brain functioning in the sleeping state from the change in the MRI signal strength.~~
2. (Original) The apparatus in accordance with claim 1, wherein the predetermined event is an event based on which a waking level of the examinee is identified.
3. (Original) The apparatus in accordance with claim 1, wherein the biosignal detection means is configured to detect an electroencephalogram of the examinee as the biosignal.

Patent  
43521-1400

4. (Previously Presented) The apparatus in accordance with claim 1, wherein the detection of the biosignal of the examinee by the biosignal detection means and the examination of the brain of the examinee by the MRI system are performed alternately.

5. (Currently Amended) A method of analyzing brain functions, comprising the steps of:

detecting a biosignal of an examinee in parallel with examination of the brain of the examinee conducted by an MRI system; and ~~finding out a part of the brain functioning in a state where a predetermined event is occurring in the biosignal by calculation based on a correlation between time-series data of the biosignal and a change in a strength of a MRI signal outputted from the MRI system~~

10

obtaining information on an MRI signal strength outputted from the MRI system at each state where the examinee is in a predetermined sleeping stage and where the examinee is in a predetermined waking stage.

15 in view of the correlativity with the change in state; and

finding out a part of the brain functioning in the sleeping stage.

6. (Currently Amended) A system for analyzing brain functions, comprising:

a detection unit for detecting a biological function ~~for identifying a waking level of a patient~~ and outputting a biosignal of ~~[[a]]~~ the patient;

20

a brain examination unit for detecting a function of a brain of the patient and outputting a brain function signal; and

Patent  
43521-1400

a location calculating unit for calculating a correlation between the biosignal and the brain function signal to determine a specific portion of the brain that is active obtaining the brain function signal from the brain examination unit at each state where the patient is in a predetermined sleeping stage and where the patient is in a predetermined waking stage by taking a differential of a change in strength in the brain function signal considered significant in view of the correlativity with the change in state, and determining which portion of the brain is functioning in the sleeping stage from the differential of the brain function signal.

7. (Previously Presented) The system of claim 6 wherein the location calculating unit calculates a location based on a correlation between time-series data of the biosignal and a change in value of the brain function signal.

8. (Previously Presented) The system of claim 6 further including an event identification support unit for identifying an event corresponding with the biosignal.

9. (Previously Presented) The system of claim 8 further including a heart monitor unit to detect heartbeat noise wherein the event identification support unit can eliminate heartbeat noise.

10. (Previously Presented) The system of claim 9 wherein the brain examination unit provides an MRI signal and the event identification support unit receives an electroencephalograph signal and the event identification support unit includes a noise elimination section and a frequency analyzing section for outputting a display of data on the frequency of occurrences of an event.

Patent  
43521-1400

## 11. (New) An apparatus for analyzing brain functions comprising:

a biosignal detection unit for monitoring an examinee and providing a plurality of biosignals representative of both a predetermined waking stage and a predetermined sleeping stage of the examinee;

5 an MRI unit for taking a plurality of MRI image signals of a brain of the examinee in correlation with the provision of the biosignals from the biosignal detection unit;

means for identifying a specific MRI image signal of the examinee's brain in both the predetermined waking stage and the predetermined sleeping stage based on correlated biosignals; and

10 a functioning brain part location unit for comparing the MRI image signals to identify the location of a functioning part of the brain in the sleeping stage.

12. (New) The apparatus for analyzing brain functions of Claim 11, wherein the functional brain part location unit compares corresponding voxels of the MRI image signals and a differential of the comparison is provided as an image of brain part functioning.

15